420,000 + 210,000 + 420,000 = 1,050,000 gallons

With 400,000 gallons of storage available, the Village currently has a deficit of 650,000 gallons. Figure 8 shows the storage capacity versus the storage needs based on a 3%, 5%, and 7% growth in storage needs per year. The figure shows that if the Village adds an additional 1,000,000 gallons of storage when they will need additional storage capacity. Depending on the population growth rate the timeline can be adjusted accordingly.

Future Source Locations

The Village meets its average peak day needs with current production of 1330 gpm (largest well (1100gpm) not counted) however, they need to pursue potential locations for future wells. A fracture trace analysis can determine the location of potential drilling sites based on intersecting fractures. Beginning this process before the need arises, the Village can obtain property if necessary, determine if the location is viable to produce the water needed for treatment and storage, and continue to allow the Village to meet the peak daily demand.

VII. PROPOSED IMPROVEMENTS

Improvements to the water distribution system including pipe size upgrades, dead-end elimination, elimination of unsupported areas, additional sources and storage, and needed maintenance are proposed and discussed below.

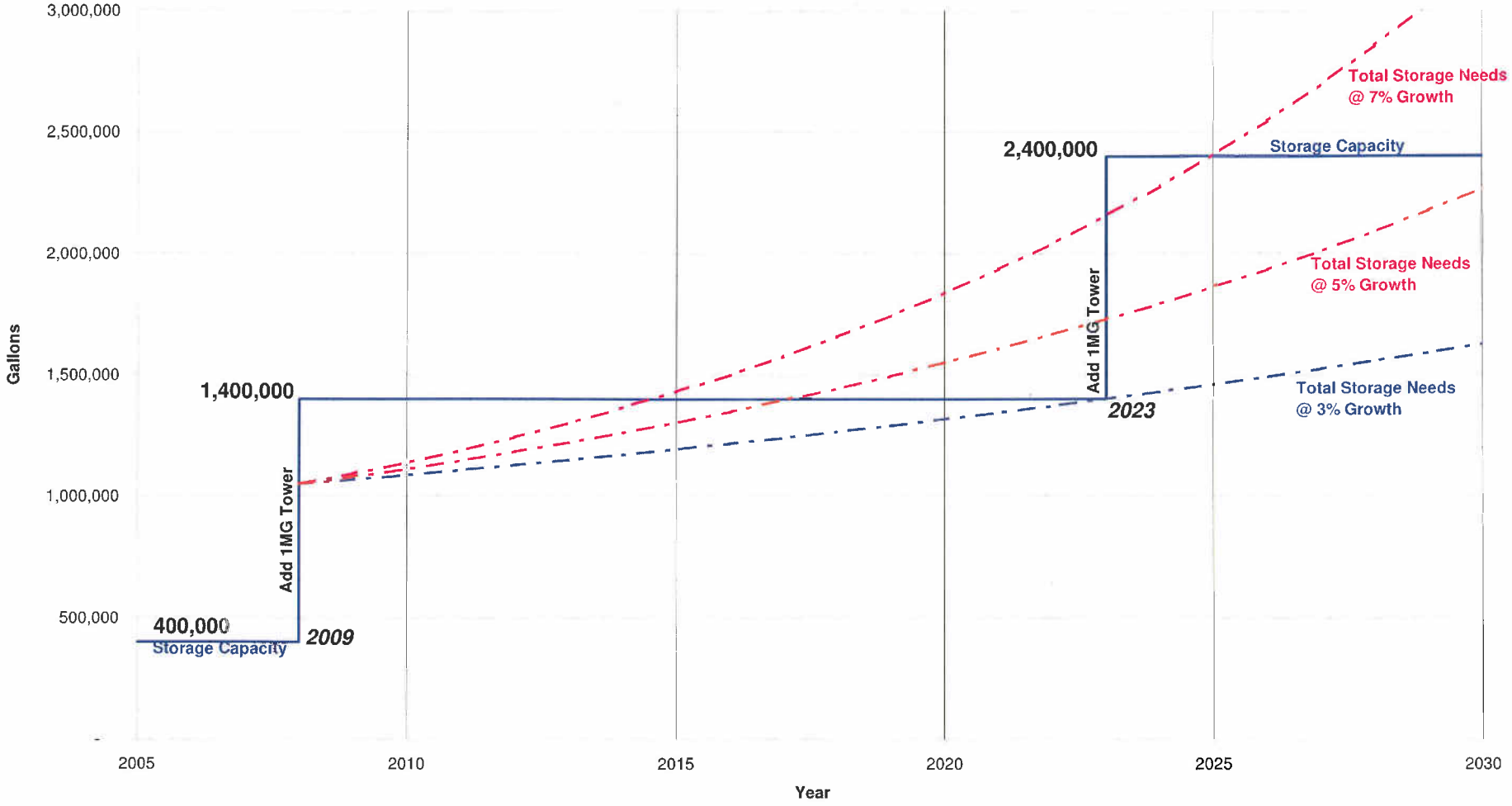
Water Main Replacement

Some areas in the Village have been identified by the Public Works Department as problem areas based on age of the water main and frequent repairs in the area. Figure 9 shows the location of these areas.

Additional Storage

Based on actual 2006 pumping rates the Village of Peotone has a projected average daily flow of 354,500 gallons per day. Currently the system has Wells 1, 3, and 4, one 150,000 gallon elevated tank, and one 250,000 gallon elevated tank. With 400,000 gallons of storage available, the Village currently has a deficit of 650,000 gallons. The Village

Figure 8
Village of Peotone
Storage Capacity vs. Storage Needs



VILLAGE *of* PEOTONE, ILLINOIS

MASTER WATER STUDY EXISTING WATER DISTRIBUTION SYSTEM
RECOMMENDED IMPROVEMENTS

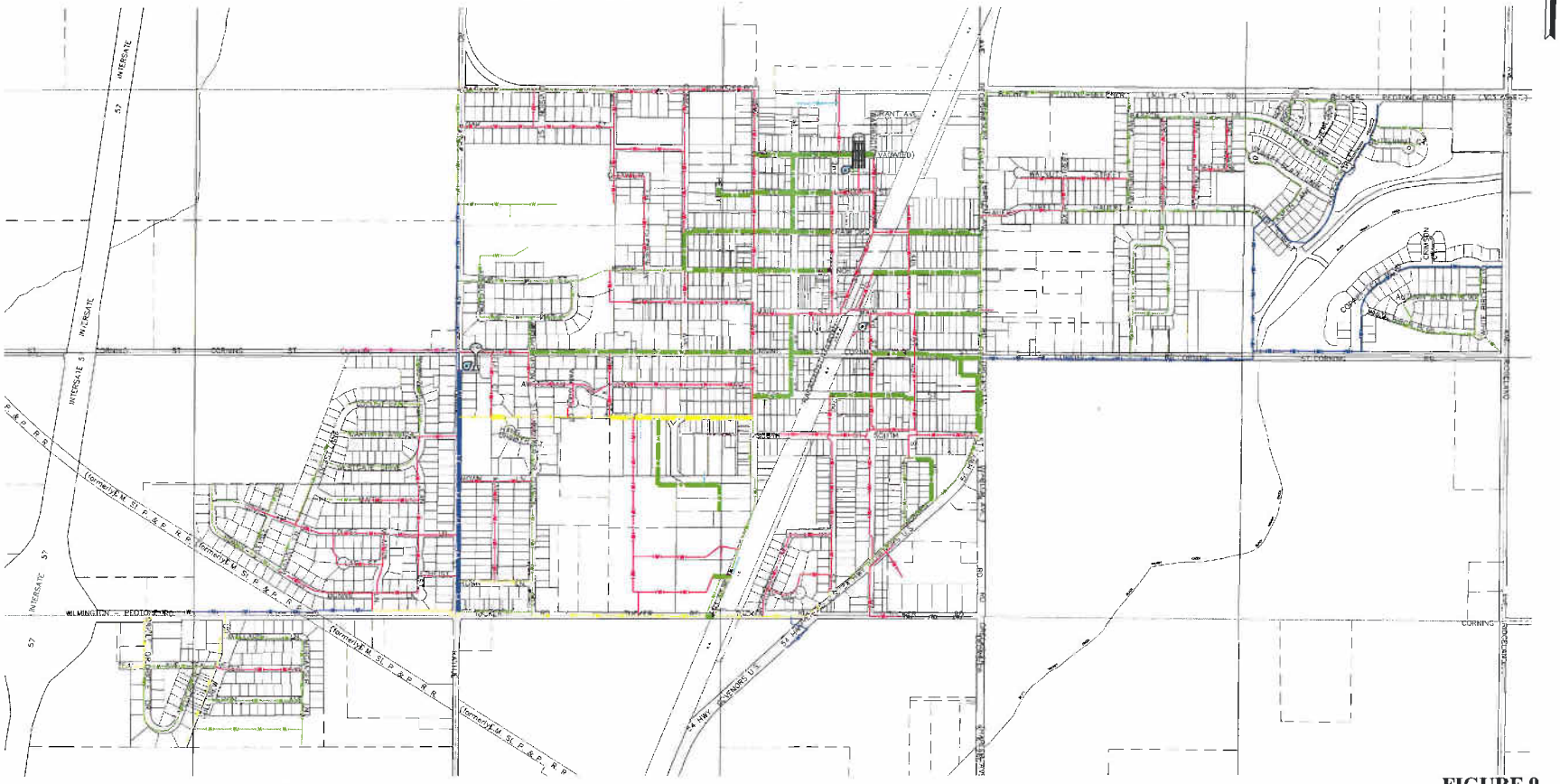


FIGURE 9

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needs an additional 1,000,000 gallons of storage immediately to meet the current peak day demands and fire flow requirements.

Unsupported Areas

Currently there is one area of the water distribution system that is supported by a single water main. The Gulls Landing subdivision will not be connected to the distribution system in the event of a break in that line. If the additional 1MG tower is constructed additional water main to support this area is proposed. Figure 10 shows the recommended improvements with the new tower.

Dead-End Elimination

The system has dead-end water mains, which are water mains that are only connected to the distribution system in one location. Dead-end water mains are hydraulically inadequate and can result in water quality problems due to the absence of water circulation. In addition, dead-end water mains do not provide adequate fire protection. These mains should be looped back into the system in order to provide proper water circulation and increase the fire flows in these areas. A majority of the dead end mains in Village are due to geographic constraints, i.e. railroad crossings and cul de sacs. These areas cannot be looped to the nearest water main without an easement through a property. Other areas are noted as dead end mains due to the construction ending in a developing area. Once expansion of the subdivision has resumed, every effort should be made to establish looping in the system.

Undersized Mains

The Village currently has approximately 18,300 feet of 4-inch water main. A phased improvement plan should be established to replace these mains with an 8-inch or larger diameter pipe. Smaller diameter pipes can affect the available fire flows to areas of Village.

VILLAGE *of* PEOTONE, ILLINOIS

MASTER WATER STUDY EXISTING WATER DISTRIBUTION SYSTEM
RECOMMENDED IMPROVEMENTS WITH NEW TOWER

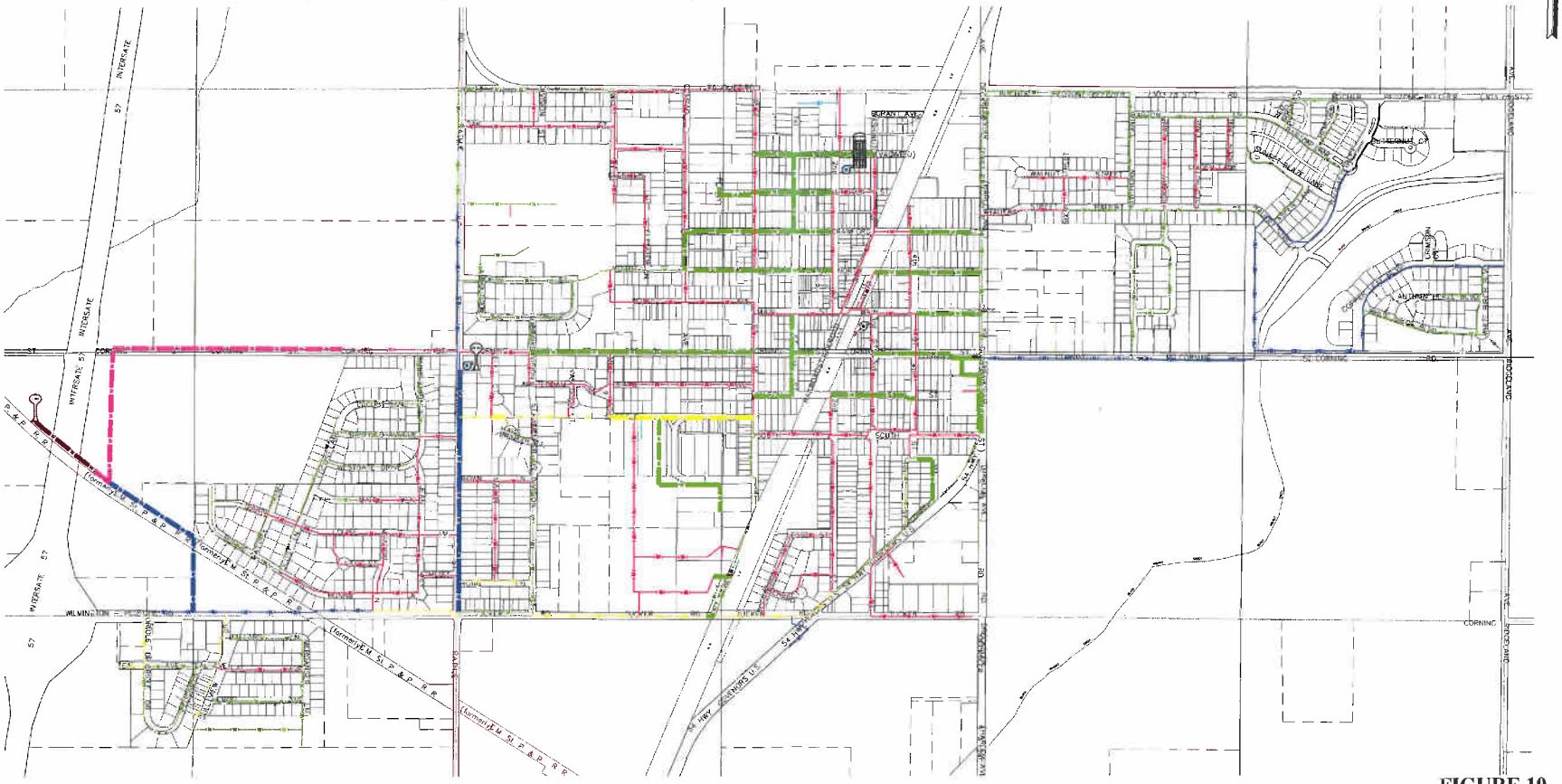

FIGURE 10

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DATE: SEPTEMBER 8, 2008

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07367-EXIS-01 VILLAGE EXIST WM IMPRVMNTS & NEW TOWER (P01)

VI.I. PRIORITIZED IMPROVEMENTS

After a complete detailed analysis of the existing distribution system and potential improvements, the following list identifies recommended improvements the Village should consider in the future when comprising their infrastructure plan. The projects are listed in approximate order of priority based on the need. The first priority is to provide additional storage, second priority is to provide a second system connection to loop two unsupported areas, third priority is to replace 4-inch and 6-inch water mains, and the fourth priority is to eliminate dead-end water mains. The Village should include in their 5-yr and 10-yr capital improvement plan, the recommended improvements that will benefit these deficient areas.

Table 7 – Prioritized Improvements

Priority	Category	Description
1	Storage	New Water Tower (Does not include the cost of property and easements and a new main to location)
2	Loop	Unsupported areas in the Village
3	Water Main Replacement	Replace 4-inch water main
4	Dead Ends	Dead End Elimination

IX. CONCLUSION

The computerized model of the water system, now that it is developed, can be used as a major planning tool as development and redevelopment occurs throughout the Village. The model can be used to size water mains, reconfigure the water distribution system if

the private subdivisions are ever absorbed into the public system, and serve as a guide for modifications to the master plan for the Village of Peotone's water distribution system.

The Village has a well interconnected system with several thousand feet of 4-inch water main that should be upgraded. The Village is currently in a deficit for storage capacity and needs additional storage added immediately. Production capabilities could last several more years depending on growth rate however, the Village needs to be prepared with new source locations when the time comes.

MASTER SANITARY SEWER STUDY
VILLAGE OF PEOTONE
07-368

OCTOBER 2008

PREPARED BY:

Robinson ENGINEERING

EXECUTIVE SUMMARY

Robinson Engineering, LTD. under direction from the Village of Peotone has completed a Master Sanitary Sewer Study Analysis, which consisted of an examination of lift stations, treatment plants, population equivalency and this written report. This report provides the Village with a summary of the current system and proposed improvements. The examination of the existing system shows the Village's treatment plant to be approximately 50% of design capacity. The Village continues to experience rapid population growth with a 23.7% increase since the 2000 census. This report contains recommendations for improvements to the sewer system as development continues to the service area and how to approach the potential development of the airport.

VILLAGE OF PEOTONE
MASTER SANITARY SEWER STUDY

List of Figures

VILLAGE OF PEOTONE

MASTER SEWER SYSTEM STUDY

I. INTRODUCTION

The Village of Peotone authorized Robinson Engineering, Ltd. to complete a study of the entire Village's sanitary sewers and treatment plant systems. This study will serve as a major tool in planning the Village's sewer system expansions and determining the system's deficiencies and recommending solutions.

Development planning and construction for housing units is rapidly underway in the Village with the potential of an airport needing service. Upon full buildout of these developments, average daily wastewater flow to the east treatment plant is projected to increase from 0.42 MGD (2007 average) to 24.4 MGD or 30.4 MGD without the Airport. Ultimate buildout within the entire Village study limits would add another treatment plant in the west which would need to treat up to 23.8 MGD.

The growth currently underway within the Village of Peotone requires an evaluation of the Village's existing wastewater system to serve proposed developments, and recommendations for future wastewater infrastructure to convey and treat wastewater generated within the Village's ultimate study limits. This report responds to the above by:

- Projecting wastewater flow from currently proposed and future developments
- Providing recommendations for future interceptors, lift stations, and treatment plants

The study limits are generally bounded by Crawford Avenue to the east; Kankakee County Line Road to the south; extend South Elevator Road (128th Ave) to the west; and reach Offner Road to the north. The study limits contain approximately 38.3 square miles, and is shown in Figure 1.